

Yohkoh Soft X-ray Observations in One Solar Activity Cycle

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We report coronal activities of the Sun in an 11-year solar activity cycle based upon *Yohkoh* soft X-ray observations. Active regions can be defined by an intensity threshold in X-ray histograms that are made from full-Sun X-ray images, and variabilities of active regions and regions outside active regions are investigated by analyzing the X-ray histograms. A shape of X-ray histogram is similar to that of the photospheric magnetic flux. This indicates a structural magnetic connectivity between the photosphere and corona. Both total X-ray intensity of active regions and total projected area of active regions change with the solar activity cycle, and the surface brightness of active region is roughly constant over the activity cycle. On the other hand, surface brightness of quiet-sun corona changes with the activity cycle in phase. Since a strong correlation between total X-ray intensity and total photospheric magnetic flux is also shown for quiet-sun regions, this clearly shows that the heating of quiet-sun corona is also closely associated with the presense of magnetic field. As a tiny magnetic activity in the solar corona, we report a statistical work on X-ray bright points (XBPs). Anti-correlation between the number of XBPs and the sunspot number has been confirmed, though a number of XBPs are found in quiet-sun regions of a low X-ray intensity at solar minimum. A deviation from a uniform latitudinal distribution and enhancement of the XBP number near the boundary of polar coronal holes are found during the course of this study.